Ontario

A Layer Farm Example:

Your Livestock Operation Under the Nutrient Management Act, 2002

Ministry of Agriculture, Food and Rural Affairs
Publication 829

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Introduction

This booklet is part of a series of livestock information books developed to help farmers understand the implications of the *Nutrient Management Act, 2002* and the associated regulations and protocols. The act addresses how nutrients, including manure, are managed while they are stored and applied to farmland for the purpose of growing agricultural crops.

For more information, or to see all of the titles in this series, visit the OMAFRA Web site at **www.omafra.gov.on.ca** or call the Agricultural Information Contact Centre at 1-877-424-1300.

For more information on provincial acts and regulations, visit the Ontario Statutes and Regulations Web site at **www.e-laws.gov.on.ca**. You can access the applicable forms online at **www.gov.on.ca**.

The farm operation information used in this booklet is not based on any existing farming operation and is for demonstration purposes only.

Some Common Acronyms

The *Nutrient Management Act, 2002* brought with it new terms that have quickly become common, and are usually abbreviated. These include:

Manure Storage Software Program	MSTOR
Minimum Distance Separation	MDS
Nutrient Management Act, 2002	NMA or act
Nutrient Management Computer Program	NMAN
Nutrient Management Strategy	NMS
Nutrient Management Plan	NMP
Nutrient Unit	NU
Nutrient Management Act, 2002 General Regulation	O. Reg. 267/03 or the regulation

Farmers planning to apply for a building permit for a livestock barn and/or permanent manure storage, and those with large operations, need to be aware of the recent nutrient management legislation. This booklet reviews two key documents – the Nutrient Management Strategy (NMS) and the Nutrient Management Plan (NMP) – and the requirements that must be met in order to obtain approval of the NMS and/or NMP (NMS/P). An NMS/P will assist the agricultural operator in managing nutrients in a way that will be environmentally friendly and economically viable. An approved NMS/P can be used in the process of obtaining a building permit for a new or expanding nutrient storage facility. Many of the requirements in the regulation do not come into force until the farmer is required to have an NMS or NMP.

Nutrient Units and Compliance Schedule

All farms planning on building a barn or manure storage (including earthen storage) located within 100 m (328 ft) of a municipal well or applying non-agricultural source materials (NASM) are now affected by the NMA. In addition, farms ≥ 300 NU are also affected by the act. The size of the agricultural operation is determined by the number of nutrient units (NUs) on that agricultural operation. An NU is defined as having the fertilizer equivalent of 43 kg of nitrogen or 55 kg of phosphorus (whichever is lower). NUs were created to enable the fair comparison of various nutrient types including agricultural, non-agricultural and commercial products (in essence an apples-to-apples comparison). A farm is defined as land no smaller than a single deed that meets the requirements of section 5 of the regulation.

The table below provides examples of the number of animals needed to make one NU. A complete listing for a variety of livestock can be found in the Farm Unit Declaration Form in the Appendices Section.

Number of Animals per Nutrient Unit on Farm Units Generating Manure

Type of Animal	Nutrient Units (animals/ NU)
Beef Cows – Includes calves to weaning	1.0
Beef Shortkeep (12.5 – 17.5 months)	2.0
Beef Backgrounders (7 – 12.5 months)	3.0
Beef Feeders (7-16 months)	3.0
Chicken Broilers (8 week cycle)	351
Chicken Broilers (9 week cycle)	300
Chicken Broilers (10 week cycle)	250
Chicken Broilers (12 week cycle)	199
Chicken – Broiler Breeder Growers (females + males transferred out)	300
Chicken – Broiler Breeder Layers (females + males transferred in)	100
Dairy Cow – Milking Age Large Frame	0.7
Dairy Heifers – Large Frame	2.0
Dairy Calves – Large Frame	6.0
Horses – Large Frame	0.7
Horses – Medium Frame	1.0
Horses – Small Frame	2.0
Sheep – Meat Ewes and Rams (including unweaned offspring and replacements)	8.0
Sheep – Feeder Lambs	20.0
Sheep - Dairy Ewes and Rams (including unweaned offspring and replacements)	6.0
Swine Feeders	6.0
Swine Sows – Dry and Boars Non-SEW	3.5
Swine Sows – Dry and Boars SEW	3.33
Swine Sows – With Litters Non-SEW	3.5
Swine Sows – With Litters SEW	3.33
Swine – Weaners Non-SEW	20.0
Swine – Weaners SEW	20.0
Turkey – Toms > 10.8 kg	76
NOTE: For animals not listed on the chart above, the number of animals per nutrient unit can be calculated by determining the number of animals that will produce the amount of nutrients that give the fertilizer replacement value of the lower of 43 kilograms of nitrogen or 55 kilograms of phosphate as nutrient.	

Nutrient Management Strategy and Nutrient Management Plan

The focus of the new act is the requirement for a NMS/P.

An NMS describes the generation, storage and destination of the nutrients produced. Essentially, in completing a NMS, farmers answer the questions, "How much manure is being produced?", "How is the manure stored?" and "Where is the manure to go?" People who own or control a livestock operation that has been phased-in must complete a NMS.

An NMP determines the details of how the generated nutrients (i.e., manure) are to be applied to a given land base. The NMP optimizes the application of nutrients to crops and enhances protection for ground and surface water.

All farm units ≥ 300 NU, and within 100 m of a municipal well, that generate nutrients and apply those nutrients to the land must prepare a NMP once the farm unit has been phased-in under the NMA.

An NMP determines the rate and timing of application of manure based on a number of different factors. These factors include:

- existing soil nutrient levels as determined through soil testing at an OMAFRA-accredited lab;
- nutrient content of the manure as determined through testing or book values;
- crops to be grown in the next five years;
- crops grown on the land in the past year;
- soil type and slope of the land;
- tillage practices used;
- method and timing of manure application;
- manure applications over the past three years; and
- proximity to surface water, including wells.

Completion of the NMS and NMP

There are two ways to complete an NMS/P. You can either complete the documents yourself or hire a certified consultant. Any person who prepares the NMS/P will need provincial certification.

Do It Yourself

There are several tools that can help you complete an NMS/P, two of which are:

- NMAN Software – a computer program developed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) that contains all of the forms and calculations necessary for a complete NMS/P, with the exception of the required sketches. OMAFRA offers training on how to complete a strategy or plan that includes using the NMAN software.
- NMAN Workbook – a paper version of the key elements of the NMAN program. OMAFRA offers a training course on the theory and science behind NMAN and the NMAN workbook with an opportunity to use this tool. The software does provide greater detail in some areas.

To complete your NMS and/or NMP, you will need some additional forms (e.g., Farm Unit Declaration, Nutrient Management Strategy and/or Plan Sign-Off, etc.). These can be accessed at **www.gov.on.ca**.

You may choose to use another software application. However, OMAFRA only offers technical support for NMAN software.

Farmers who choose to do their own NMS/P must obtain the following certificate:

Certificate Title	For	Timeline
Agricultural Operation Planning Certificate	Agricultural operators who plan to prepare their own NMS/P	Must be certified before submitting their strategy or plan for approval

A list of the necessary courses, dates and locations are available by calling the Agricultural Information Contact Centre (AICC) at 1-877-424-1300 or from the OMAFRA Web site at **www.omafra.gov.on.ca**.

Hire a Consultant

Many farmers hire consultants to complete their NMS/P on a fee-for-service basis. Anyone completing plans and strategies for others must be certified by OMAFRA. A list of consultants that are certified by OMAFRA can be obtained by contacting the AICC at 1-877-424-1300 or from the OMAFRA Web site at **www.omafra.gov.on.ca**.

Consultant fees will vary, depending on the complexity of the situation and the acreage involved. Plans must be updated every five years and reviewed on an annual basis.

If events listed in sections 22 or 26 of the regulation occur to the operation prior to the five-year mark, then the NMS/P must be updated. Minor changes to a strategy or plan (e.g., fall spreading versus spring spreading) must be documented and require the farm operator to update the NMS/P to ensure the appropriate utilization of the manure.

Regardless of who completes the NMS/P, it is the responsibility of the farmer to ensure that the NMS/P is implemented and that all nutrient application activities are documented.

Planning for the expansion or upgrading of a farm operation can also include a number of important business planning and financial management decisions. The Canadian Farm Business Advisory Service provides low cost access to qualified independent business management consultants who can help you assess the financial performance of your current operation, consider your business options, and develop a full set of projections for any planned changes.

The Canadian Farm Business Advisory Service has three program components:

The Farm Business Assessment provides up to five days of consultation with a qualified farm business advisor to assess your current business, look at your business planning options, and develop financial projections for the changes and options you are considering. Eligible producers can access this service for a nominal fee of $100. A list of qualified advisors providing this service in your area is available by contacting Canadian Agri-Renewal Services at the telephone number below.

The second component, Specialized Business Planning Services, is available to producers who require a more specialized business plan for a major business change – such as an expansion plan or farm succession plan. This program offers government assistance of up to 50%, to a maximum of $8,000, to help offset the cost of hiring qualified consulting services.

The third component, Planning and Assessment for Value Added Enterprises, focuses specifically on assessing the feasibility and business planning needed before establishing or expanding ventures designed to add value to agricultural products. This program also provides assistance of up to 50% of the cost of consulting services – to a maximum of up to $10,000 per producer.

Information on any of these business planning services is available by calling Canadian Agri-Renewal Services toll free at 1-866-452-5558. Producers in Northern Ontario can call 1-800-461-6132.

Phase-in Periods

Livestock farms will be required to comply with the NMA as per the following schedule:

Size of Operation (in NU)	Phase-in	NMS/NMP
≤5	Not affected	Not required
Operations ≥300 (Existing or Expanding)	September 30, 2005	NMS and NMP
New and Expanding* operations >5 and <300 NU	December 31, 2005	NMS (and NMP if applicable)

* *Construction of structures to house farm animals or manure storage or the building of an earthen storage*

When submitting a plan, allow sufficient time for data collection, NMS/P preparation, review and approval. Errors in the NMS/P can result in the NMS/P being returned for clarification or correction and can cause delays in the approval process, thus extending the approval time. Keep in mind that some municipalities may require a NMS/P for farms not covered by the regulation. It is important to check with your municipality to determine whether there are additional requirements that must be met.

Building Permits for Phased-in Farms

The NMA outlines criteria that must be met for building new permanent manure storage facilities. While the NMA, regulations and protocols outline the criteria that must be met before a building permit is issued for a new permanent manure storage facility, there are additional requirements that you must also follow to satisfy the *Ontario Building Code, 1992*.

Engineered Plans and Construction Supervision

Once operations are required to have a NMS/P, there are standards that apply under the regulation for the construction or expansion of permanent nutrient storage facilities. These include external permanent manure storage facilities and in-floor storage structures in the barn. The regulation requires these facilities to be designed and their construction supervised by a professional engineer. The only exception is solid manure storages with a floor area of less than 600 m^2, walls less than 1.0 m high and a volume of less than 600 m^3. To obtain a building permit for a permanent liquid nutrient storage facility or a permanent solid nutrient storage facility ≥300 NUs and without a concrete floor, the engineer must submit a site plan, a geotechnical investigation report and detailed construction drawings. The engineer is responsible for inspection during the period of construction.

Site Plan

According to the NMA, a minimum distance must be maintained between the manure storage facility and various water sources.

Minimum Distance between the Permanent Manure Storage and:	Distance (metres)
A drilled well (>15 metres deep)	15
A municipal well	100
Other wells (dug, bored)	30 (90 if the facility will store non-agricultural source materials)
Surface water	50 (as measured along the flow path)
Field drainage tiles	15
Tile inlets	50 (as measured along the flow path)
A flood plain	No building within the 100-year flood line*

** Unless a permit has been obtained under Section 28 of the Conservation Authorities Act*

Surface water includes ponds, wetlands, lakes, rivers, creeks or artificial channels that support aquatic-type plants. A grassed waterway for erosion control is not considered surface water and neither is a dug-out pond as long as it has no connection to surface water (see section 2.(1) and (2) in the regulation for clarification).

The distance is measured from the permanent manure storage facility to the top of the bank, of surface water.

Minimum Distance Separation (MDS) for Odours

The MDS formulas establish an appropriate distance separation between livestock barns, permanent manure storage facilities and neighbours. These are currently part of provincial land use policy. They are not a requirement of the regulation. Most municipalities have incorporated these guidelines into their zoning bylaws. In these cases, the MDS distances will have to be met before a building permit is issued. The municipality can provide you with the necessary MDS calculations based on information you supply.

Site Characterization

A professional engineer or geoscientist must complete a site characterization for construction or expansion of a permanent liquid nutrient storage facility or a solid permanent nutrient storage facility ≥300 NUs without a concrete floor. The site characterization establishes the hydrogeologic characteristics of the soil and the depth to the groundwater or bedrock. The soil characterization may be done by a lab analysis of a soil sample, an on-site test, or, if the soil is very heavy, a visual assessment by a professional. The results of this investigation will determine the design criteria for a permanent manure storage facility. This chart shows under which circumstances these options must be used.

	Soil Conditions Required between the Tank Bottom and the Bedrock or Aquifer	Tank Design Details
1	• 1.0 m of hydraulically secure soil* or • 1.0 m of soil with more than 15% clay	• Unlined tank, unreinforced floor
2	• 0.5 m of hydraulically secure soil* or • 1.0 m of soil with at least 10% clay	• Unlined tank, reinforced floor
3	• 1.0 m of native undisturbed material or • 1.0 m of compacted granular material	• Lined tank, unreinforced floor
4	• 0.5 m of native undisturbed material or • 0.5 m of compacted granular material	• Lined tank, reinforced floor

**one having a maximum saturated hydraulic conductivity of 1 x 10^{-8} metres per second. This is determined by a lab test of the soil. It is roughly equivalent to a soil with at least a 20% clay content.*

Reinforcing the floor or lining the excavation is costly. Farmers should also consider moving the storage to a more suitable location.

Construction Drawings

Detailed construction drawings of the manure storage (concrete, steel or earthen) and of liquid manure transfer systems are to be provided by a professional engineer. The regulation lists specific design requirements that must be met.

Storage Capacity

The regulation requires a minimum of 240 days of nutrient storage capacity, which can be comprised of:

- the capacity of the storage, less an allowance for accumulated precipitation (for open-top structures) and a 0.3 m freeboard at the top;
- temporary storage of manure in the field (solid manure only); and/or
- off-site or off-farm storage capacity if it is identified/explained in the NMS/P.

The MSTOR computer program can determine the required manure storage volume. It is part of the NMAN program.

Options for periods less than 240 days are provided for situations described in the regulation (e.g. NMS, NMP, broker, animals inside for part of year).

When expanding nutrient storage, farmers may decide to:
- add enough storage to take the expanded operation up to 240 days of storage as per the minimum requirement, or
- build larger (e.g. up to a full year of storage).

A larger tank gives more flexibility and options for spreading times. Under the following conditions, this situation can be an advantage.

- **Wet conditions in fall** – severely restrict spreading opportunities. When followed by a wet spring, this can lead to tanks overflowing when storage capacity is borderline.
- **Light soils (e.g. sandy loam)** – as calculated in NMAN, it may be recommended that spreading be delayed until cooler fall weather, in order to retard the conversion of ammonium to nitrate and reduce the risk of groundwater contamination. If this is the case, 240 days of storage may be insufficient.
- **Circular manure tanks** – the extra storage can prove less costly, as a large economy of scale applies to circular manure tanks.

Consider whether the benefits of increased storage capacity outweigh the added capital cost.

Manure Transfer Systems
On phased-in farms, the pipes and the connectors used to drain pits and transfer the manure to long-term storage must now use gasketed fittings.

Manure Application Issues
There are several considerations that will affect the location of land available for manure application. A reduction in manure application rates may be caused by the buffer zones next to surface water or dug, drilled or municipal wells.

Buffer Zones
A vegetated buffer zone of at least 3 m in width must be established next to any top of bank of surface water such as a lake, pond, ditch or creek that supports aquatic-type plants. This does not apply to a grassed waterway or a roadside ditch that has no stream. Within 10 m of this buffer strip, the manure will have to be injected or incorporated within 24 hours unless there is a living crop or at least 30% crop residue.

Water Wells

Manure, non-agricultural source materials and fertilizers are not to be applied closer than the distances shown below:

Well Type	Setbacks for Ag. Source Materials	Setbacks for Non-Ag Source Materials	Setbacks for Commercial Fertilizer/Compost
Municipal well	100 m	100 m	100 m
Drilled well*	15 m	15 m	3 m
Other wells	30 m	90 m	3 m

** Drilled well refers to a well with a minimum depth of 15 m, and a continuous watertight casing with a minimum depth of 6 m. Wells that meet these criteria are normally, but not necessarily, drilled.*

The farm operator, Bonnie Sharp, is planning to construct a new chicken layer barn on her 40 ha (100 ac) farm. Since Bonnie is applying for a building permit after January 1, 2006 to construct a barn and manure storage for a livestock operation greater than 5 nutrient units, this operation is phased-in by the requirement to have a Nutrient Management Strategy (NMS). Previously, Bonnie operated a dairy operation on a 40 ha (100 ac) adjacent property. She sold the dairy cattle and quota to finance the building of a cage layer barn and the purchase of layer quota for 24,400 birds.

Summary of Farm Operation

- 24,400 layers, purchased at 18 weeks and kept until the end-of-lay
- construction of a new 12 m x 73 m (40 ft x 240 ft) barn
- construction of a new 12 m x 24 m (40 ft x 80 ft) covered manure storage on the end of the barn
- cash crops on a 4-year rotation of corn, soybean, winter wheat and some hay
- all feed is purchased
- all land is owned

Property Description:

Layer Farm: 40 ha (100 ac); Concession 1, Lot 1, County of Brant

Number of Fields	Field Area	Workable Area	Area Available for Nutrient Application
1	16 ha (40 ac)	16 ha (40 ac)	15.8 ha (39 ac)
2	16 ha (40 ac)	16 ha (40 ac)	16 ha (40 ac)

	Barns	Manure Storage	Livestock
Existing	none	none	none
Proposed	12 m x 73 m (40 ft x 240 ft)	12 m x 24 m (40 ft x 80 ft) covered concrete floor permanent storage	24,400 layers/year

A Layer Farm Example

Former Dairy Farm: 40 ha (100 ac); Concession 1, Lot 2, County of Brant

Number of Fields	Field Area	Workable Area	Area Available for Nutrient Application
1	12 ha (30 ac)	12 ha (30 ac)	11.9 ha (29 ac)
2	12 ha (30 ac)	12 ha (30 ac)	12 ha (30 ac)
3	15 ha (36 ac)	15 ha (36 ac)	15 ha (36 ac)

	Barns	Manure Storage	Livestock
Existing	18 m x 36 m (60 ft X 120 ft) former dairy barn drive shed	solid, concrete pad	none
Proposed	none	none	none

Cropping

All land will be in a four-year rotation of grain corn, soybeans, winter wheat and hay. When preparing a NMP it is highly recommended that all fields be soil tested once every 5 years to determine the existing nutrient levels present. The soil samples should be analyzed by an OMAFRA-accredited laboratory. A good soil sampling program monitors soil nutrient levels and prevents over-application of nutrients. Appendix C indicates the soil lab test results for this operation. One test per every 10 ha (25 ac) is recommended.

Verification of actual crop yields is important as the amount of manure that may be applied is partially controlled by the actual yield achieved on a per field basis. Crop rotation records should be maintained, as different crops will result in different rates of manure application.

How does the Nutrient Management Act, 2002, affect this farm?

The number of nutrient units (NU) on Bonnie's farm is determined by the capacity of her barn. The barn will have a capacity to house 24,400 layers. For layers, 150 laying hens is the equivalent to one nutrient unit (NU). This means Bonnie will have 163 NU (24,400/150) on the farm operation. As this project proposes the construction of a facility to house farm animals that will require a building permit, she must complete a NMS and have it approved by OMAFRA before the chief building official can issue the building permit. The size of the operation is less than 300 NU, therefore there is no requirement to complete a NMP.

Completing the NMS and NMP

For the proposed project, Bonnie is required to complete a Nutrient Management Strategy (NMS) that includes the production facility and the storage of the manure. She also chooses to complete a Nutrient Management Plan (NMP). While it is not a legal requirement, a NMP for the spreading of the manure and nutrients is highly recommended as a best management practice. It also demonstrates due diligence on Bonnie's part for handling nutrient application on her farm. Only the NMS must be approved by OMAFRA.

The goal of nutrient management is to balance the amount of nutrients being applied to the land with the amount of nutrients required by the crop. This will be a factor for determining the amount of land required for manure application from the operation. Another benefit of preparing a NMP is it will allow the farmer to determine where they will get the most benefit from the manure nutrients on the farm. This is an important consideration, given current crop and input prices, to the profitability of any farm operation.

Bonnie has the option to complete the required NMS and voluntary NMP documents herself or hire someone to complete them on her behalf. If Bonnie decides to complete the NMS/NMP herself, she must take the Fundamentals of Nutrient Management, Introduction to NMAN and the Regulations and Protocols courses offered by OMAFRA. For information on these courses call the Nutrient Management Information Line at 1-866-242-4460.

Due to the size of the operation and time constraints, Bonnie decides to hire a consultant to prepare her documents. She contacts several consultants and asks each of them about their experience, cost, the specific services they provide, and ensures that they are certified by OMAFRA. It is still Bonnie's responsibility to make sure that the strategy is implemented appropriately and documented.

Manure Storage and Spreading Considerations

Storage

The 24,400 hens in a cage system with belt cleanout and air dryers will result in 640 tonnes (705 tons) per year of manure at 30% dry matter. The proposed 12 m x 24 m (40 ft x 80 ft) manure storage provides approximately 300 days of storage if the manure is piled 2.4 m (8 ft) deep. Belts located under the cages will empty the manure every two days into the manure storage area. The manure will be spread directly onto the land twice a year.

Spreading Restrictions

In reviewing her NMS/P with her consultant, Bonnie learns of several restrictions that apply to her operation that will reduce the area of land available for manure application.

Establishment and maintenance of a 3 m (10 ft) wide permanently vegetated buffer zone or setback along open municipal drains and stream areas will help prevent manure and soil from entering these sensitive areas. This system is a best management practice and requirement under the NMA for farms required to prepare a NMP. As an additional best management practice, the NMAN software has a built in function that takes into account the field slope adjacent to watercourses, the soil Phosphorous (P) concentrations, tillage practices, manure application rate, etc. and determines if additional manure spreading setbacks should be implemented to further reduce the risk of P from entering the watercourse.

A stream, 397 m (1300 ft) in length, flows along the edge of the woodlot in Field 1 on the Layer Farm. The NMAN software has determined that a 6 m (20 ft) manure spreading buffer should be maintained along this watercourse. Included in the 6 m (20 ft) setback is the 3 m (10 ft) permanent vegetative buffer strip.

A municipal drain runs along the road and the western edge of Fields 1 and 2. A similar minimum setback of 6 m (20 ft) is proposed for this location.

A minimum 15 m (50 ft) setback is required from the drilled well located on the Layer Farm and the Former Dairy Farm. No manure should be applied to land within this buffer zone.

Manure Application and Analysis

Bonnie has sufficient land base between her two properties to land apply all the manure generated in most years of her plan. However, due to her rotation and desired application rate, she is required to transfer a portion of her annual manure production to a neighboring cash crop farmer in year 3.

She has taken soil samples as part of the former dairy operation and will use this information in her NMP/NMS. Regular manure analyses are recommended, however this operation could use the NMAN default values to determine the approximate nutrient content and suggested application rates. A good representative sample will allow for the correct nutrient credits to be used for maximum crop growth and prevent over application of manure and/or commercial fertilizer.

The farms are located on a Brantford Silt Loam soil. Manure application on this operation will be by v-box spreader. The NMP will detail the volume and timing of manure applications that may be applied to each field.

The crop rotation consists of corn, soybeans, and wheat. Occasionally hay is seeded down to provide horse hay for a neighbour.

Bonnie applies 22 tonne/ha (10 tons/ac) of poultry manure once every three years to a corn crop. It costs approximately $3 per ton to apply the manure. The fertilizer equivalent value of the manure is about $135 (after spreading), but to realize the maximum value it is recommended that it be spring applied and incorporated immediately. Maximum nutrient availability to the crop from manure will reduce the need for commercial fertilizer. There can be more than a $100 range in manure value depending on time and method of application as well as existing soil fertility levels crop nutrient needs. A portion of the organic nitrogen becomes available over several years, almost like a "slow release" fertilizer. Since soil fertility levels are in a medium to high range, they will benefit from the addition of manure. Manure applied to fields with excessive soil fertility levels will not have the same economic benefit from the phosphorus (P) and potash (K) in the manure as when applied to lower testing fields, and will also have increased risk of environmental losses.

No economic value has been given to the organic matter benefit from manure. Manure, especially solid manure, provides significant organic materials to the soil, which contributes to improved soil health and higher organic matter levels over time. Improved soil health and higher organic matter levels benefit crops by providing better moisture holding capacity, which translates into enhanced nutrient cycling and longer windows for water and nutrient uptake during seasons of "dry-weather stress". The result is improved yields over the long term.

Since Bonnie has less than 365 days worth of storage on this operation, there will be a need for additional application opportunities for a portion of the annual volume produced. This will also help spread out her workload and reduce the risk of compaction during wet springs. Bonnie has decided that the hay crops will not receive manure, since it will not maximize the nutrient value. Instead, she plans to apply manure after wheat or after corn harvest, later in the fall to minimize the potential for some of the nitrogen (N) loss through leaching. When manure is applied to wheat stubble in late summer or early fall, a cover crop should be planted to utilize and hold the nutrients in organic form over the winter.

Bonnie recognizes the value of her poultry manure and plans to apply it prior to corn in the rotation. The application rate will be based on the NMP and the site characteristics within each field.

Production System Changes to Affect Nutrient Content

Bonnie can make a number of management decisions that may affect the nutrient profile of the manure produced on her farm. This in turn will impact her NMP, specifically the amount of land required for manure disposal.

Dietary or management adjustments that can influence the nutrient content or volume/dry matter (DM) content of manure need to be proven by a solid record of sample results before a NMS or NMP can be altered to take the adjustments into account. It may be worthwhile investigating the following options, as they may be beneficial even if the NMS/P does not immediately reflect the advantage:

- Use nipple drinkers with an underslung cup at the correct height, adjusted for bird size/height to reduce water waste and improve bird growth rates.
- Use water meters to improve management of water usage in an operation and provide an indication of possible flock disease outbreak.
- Utilize the ideal protein concept to balance the dietary amino acids to ensure optimal production.
- Optimize barn temperature/ventilation rates for bird age/size to reduce over/under feeding.
- Maximize the amount of air reaching the manure through the use of an air duct for belt drying or existing barn ventilation.
- Adjust the feeders to reduce feed waste will reduce the volume and amount of nutrients in the manure.
- Use lighting programs to influence feed consumption and lay patterns.

Deadstock Disposal Considerations

Bonnie knows that proper disposal of her daily mortalities is important. Two of the options she considers are:

- Rendering - storing mortalities in a freezer for later pickup and disposal by a rendering company.
- Composting - constructing a three-bin, concrete floor, covered and gated composting unit.

Bonnie uses OMAFRA's "On-farm Composting of Livestock and Poultry Mortalities" factsheet, Order No. 03-083, to size the 3-bin composting unit. Using the "Worksheet for Sizing Mortality Composting Units" she determines that the recommended bin size, based on a 45 day cycle, is too small to be practical and still allow for effective composting. She decides instead to use the 90 day cycle calculations. This will also allow for longer composting time and will reduce the number of times per year for moving and disposing of the composting material.

Assuming a 1.8 m (6 ft) high pile and using the recommended minimum width of 1.8 m (6 ft), the worksheet calls for 2 primary bins at 1.8 m (6 ft) deep. Although the single secondary bin only needs to be 2/3 the size of one of the primary bins, Bonnie elects to make all three bins a uniform size. Because she needs storage for the sawdust she will use as her composting substrate, she decides to add an additional bin. The factsheet recommends that the substrate bin be twice the size of one of the primary bins. To maintain uniformity Bonnie decides to keep the 1.8 m (6 ft) bin depth therefore forcing the width to increase to 3.6 m (12 ft). Bins were sized to accommodate disposal of cracked eggs.

After working through these calculations, she decides that rendering of eggs and mortalities is a better option. However her biosecurity plan requires that the rendering company's vehicle does not go near the layer barn. To use the rendering service she will have to leave the mortalities in bins at the road. Since she lives on a busy highway and wants to avoid complaints she decides to screen off the area with some fencing and landscaping where the bins will await pick up.

Biosecurity Considerations

Bonnie is aware that there are biosecurity concerns that need to be addressed when you handle the manure from her operation. Manure, manure handling equipment, bedding material, deadstock, pests and staff can all be vectors that can bring disease challenges onto or off the farm. Manure from flocks that have had a disease challenge may need to be handled differently. She works closely with her poultry veterinarian regarding enhanced procedures. Information on biosecurity can be found on the Ontario Ministry of Agriculture, Food and Rural Affairs website **www.omafra.gov.on.ca**.

Wash Water

A septic system is required for the washroom and wash water from the egg packing room.

Food Safety

Bonnie is aware that the layer industry has adopted a HACCP based, On Farm Food Safety Program called Start Clean Stay Clean™. This may add additional requirements beyond the Nutrient Management Act, 2002, for the handling of litter materials that she must comply with. Bonnie can find information on these requirements at Ontario Egg Farmers, **www.eggsite.com**.

Contingency Plan

Even with the best planning circumstances can change, requiring you to alter how you store, apply and handle your manure. A good contingency plan is critical in emergencies.

A sample contingency plan for this operation can be found in Appendix D.

Municipal Requirements

Bonnie meets with her municipal building inspector to discuss her building plans. She learns that there are a number of conditions that need to be met in order to obtain a building permit:

A. Minimum Distance Separation (MDS)
B. Engineered Plans and Construction Supervision
C. Site Characterization for Ground Water Protection
D. Siting Restrictions for Surface Water Protection

A. Minimum Distance Separation

MDS is not a requirement of the NMA. However, as in most municipalities in Ontario, the local zoning bylaw requires Bonnie to locate her new barn according to the Minimum Distance Separation formula. The municipal officials complete the calculations based on the information she supplies. The new barn must be kept a minimum of 253 m (830 ft) from the nearest neighbour's dwelling and 63 m (207 ft) from the road allowance. The proposed site for the barn can meet all required MDS requirements. For biosecurity reasons, Bonnie decides to locate her barn farther back than the minimum 63 m (207 ft) to better control visitor access.

B. Engineered Plans and Construction Supervision

To obtain her building permit, Bonnie must provide a set of engineered building plans. She has two options for obtaining these plans:

- Option One - hire a builder who has a set of engineered drawings that can be modified to meet her needs, or
- Option Two - hire an engineer to design a building for her based on her concepts, then hire a contractor to construct the building.

Bonnie finds out that the cost of the plans will be included in the price of the building negotiated with the contractor so she chooses this option. Regardless of which option Bonnie chooses, she will need to ensure that her building project meets the requirements set out in the Construction and Siting protocol.

C. Site Characterization for Ground Water Protection

The NMA, requires an engineer or geoscientist to complete a site characterization of the soils and aquifer for the site where there is a plan to construct or expand a solid nutrient storage facility that does not have a concrete floor, or when the farm unit will have 300 or more NU, or when there is an increase in the capacity of the farm unit to more than 300 NU. This information will determine what design parameters must be followed for the manure storage facility.

Because the covered manure storage area that Bonnie wants will be attached to the layer barn with a concrete floor and walls, no site characterization for the 12 m x 24 m (40 ft x 80 ft) storage facility is required.

D. Siting Restrictions for Surface Water Protection

According to the NMA, a minimum distance must be maintained between the manure storage facility and various water sources.

Minimum Distance Between the Permanent Manure Storage and:	Distance (metres)
A drilled well (see definition of drilled well)	15
A municipal well	100
Other wells (dug, bored)	30 (90 if the facility will store non-agricultural source materials)
Surface water	50 (as measured along the flow path*)
Field drainage tiles	15
A regulated flood plain	No construction of a permanent nutrient storage within the 100-year flood line**

** A flow path does not have to be in a straight line. It is the distance that liquid must travel before reaching surface water.*
*** Unless a permit has been obtained under Section 28 of the Conservation Authorities Act*

Having gone through the nutrient management exercise, Bonnie is more aware of the proper way to store and manage the manure generated by her operation. This will help her to maximize the agronomic and economic value of the manure produced on this operation. Bonnie understands that regardless of who completes the NMS/P, as the farm operator, she is responsible for implementation of the strategy and plan, and for monitoring of all activity.

A selection of the most common forms that are part of a NMS/P are included in the Appendices. Appendices A and B are concept sketches of a Farm Unit Sketch and a Field Sketch. The sketches do not show all of the details that may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended, and the associated Nutrient Management Protocol, Parts 5 and 7. These items are also available at **www.omafra.gov.on.ca**. The following outlines the items that may or may not be needed to complete the sketches.

Farm Unit Sketch

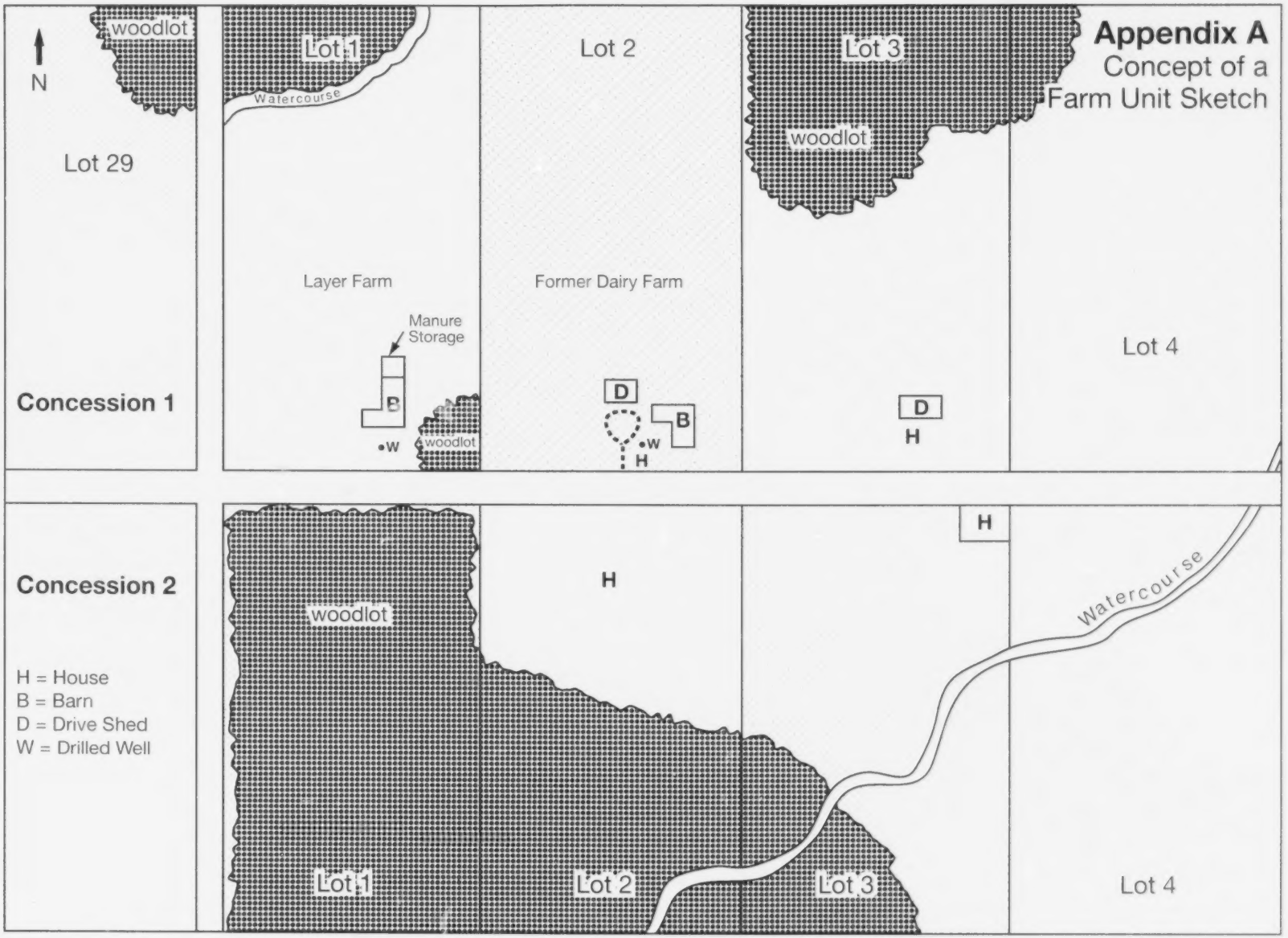
1. North direction arrow
2. Property identifier
3. Label whether the land is owned, controlled (rented or leased) or if there is an application agreement
4. Road names, municipal boundaries, neighbours and other local features
5. Permanent, temporary and proposed generating facilities
6. Permanent, temporary and proposed storage facilities and sites
7. Dimensions of all generating and storage facilities and sites
8. Distance between facilities and lot lines
9. Location of flow paths and physical barriers*
10. Location of wells (includes gas, oil, test and water wells)
11. Location of municipal wells
12. Location of tile inlets
13. Location of surface water
14. Location of other non-agricultural land uses

* *Including these items as part of a sketch may facilitate the approval of your application by providing details required as part of the compliance with Regulation 267/03, as amended.*

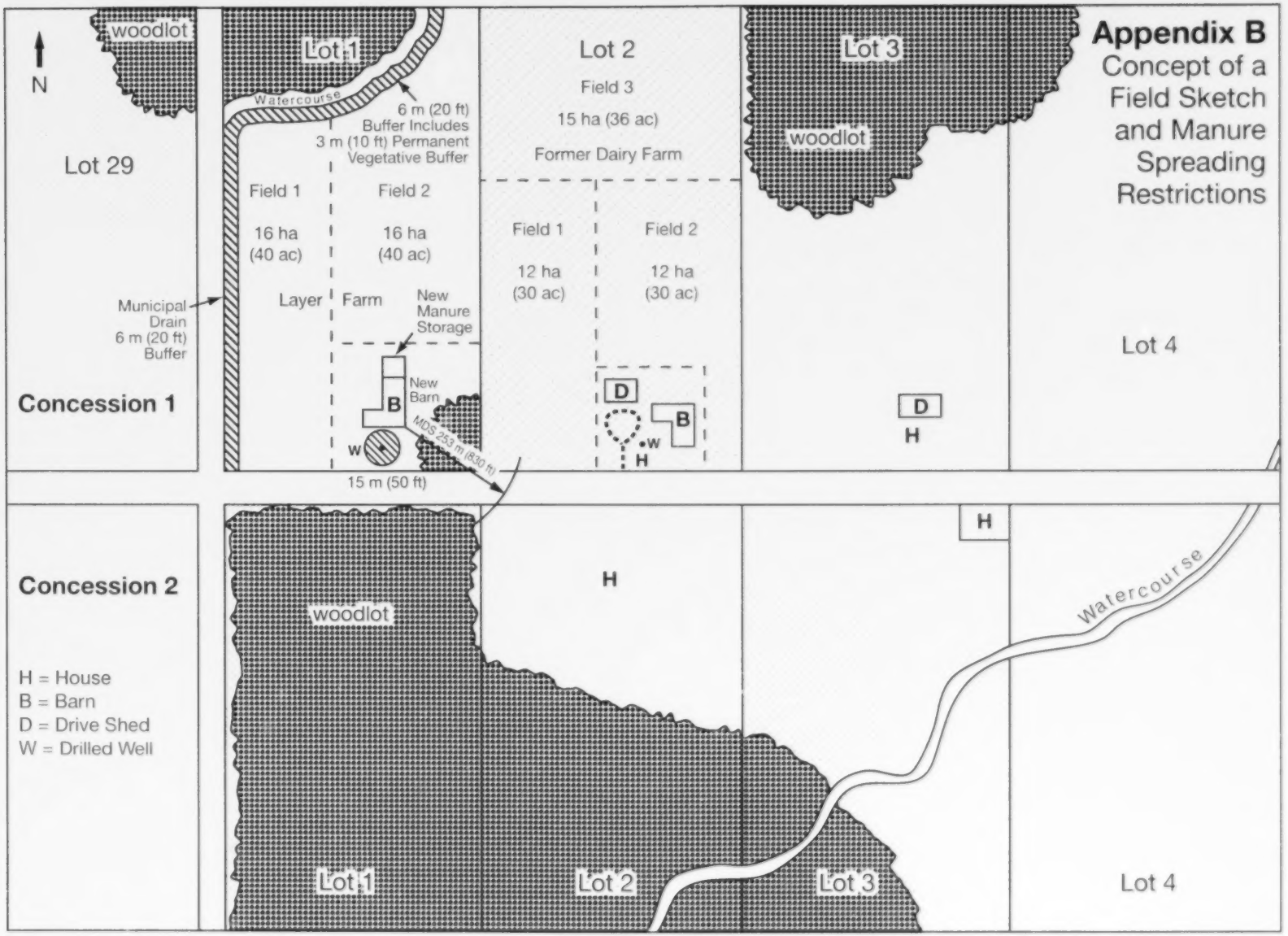
Field Sketch

1. Field identifier (from Farm Unit declaration)
2. Section within a field that has more than one section
3. Identify whether tile drains exist
4. Location of tile inlets*
5. Location of tile outlets*
6. Location of surface water within 150 m (492 ft) of the field*
7. Location of non-agricultural land uses
8. Location of municipal wells within 100 m (328 ft) of a field boundary
9. Location of all other known wells within 90 m (295 ft) of the field boundary if the field is receiving biosolids
10. Location of all other known wells within 30 m (98 ft) of the field boundary if the field is only receiving agricultural source material
11. Setback distances required from all wells*
12. Minimum depth to saturated soil conditions
13. Maximum sustained field slope*
14. Maximum sustained field slopes within 150 m (492 ft) of the top of the bank of all surface water
15. Setback distances required from surface water established by the minimum separation distance and/or the phosphorus index
16. Location of all permanently vegetated buffer zones*

* *Including these items as part of a sketch may facilitate the approval of your application by providing details required as part of compliance with Regulation 267/03, as amended.*



Appendices A and B are concept sketches. The drawings do not show all of the details which may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended and the associated Nutrient Management Protocol, Parts 5 and 7. These items are available at www.omafra.gov.on.ca.



Appendices A and B are concept sketches. The drawings do not show all of the details which may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended and the associated Nutrient Management Protocol, Parts 5 and 7. These items are available at www.omafra.gov.on.ca.

Soil-Ag
Lab Services
(An OMAFRA Accredited Lab)

Unit A - 10 Dirt Street
HOMETOWN, Ontario A0A 0A0

Soil Test Report

Date Submitted: May 20, 2006.
Report Date: June 1, 2006.

Customer	Sample ID	Lab#	pH	BpH	Organic Matter %	NO_3-N (ppm)	$NaHCO_3$ Test Phosphorus (ppm)	Potassium (K) (ppm)	Magnesium (ppm)	Calcium (ppm)
Sharp	Dairy-F1	574	7.2		3.3		18	199	112	
Sharp	Dairy-F1	575	6.8		3.4		22	200	135	
Sharp	Dairy-F2	576	7.0		3.6		20	201	125	
Sharp	Dairy-F2	577	6.9		3.4		17	202	122	
Sharp	Dairy-F3	578	7.1		3.4		23	198	132	
Sharp	Dairy-F3	579	7.1		3.2		19	201	128	
Sharp	Layer-F1	580	6.9		3.2		21	201	127	
Sharp	Layer-F1	581	7.1		3.4		19	200	132	
Sharp	Layer-F2	582	6.9		3.1		23	204	129	
Sharp	Layer-F2	583	7.3		3.5		21	202	132	

EMERGENCY CONTACT TELEPHONE NUMBERS

Spills Action Centre	1-800-268-6060
Ministry of the Environment (Local Office)	1-222-333-4444
Backhoe Operator: Excavations Inc.	1-222-333-4444
Dump Truck Operator: Dumptrucks Ltd.	1-222-333-4444

On-Site Emergency Equipment

Solid manure spreader • Tractor • Skidsteer loader

This contingency plan sets out possible actions that can be taken in the event that this Nutrient Management Strategy and/or Plan cannot be followed.

Weather or Equipment Conditions Impeding Planned Storage or Application

Manure Application Change

- When the timing of a manure application must be changed, adjust the nutrient amounts to reflect the change in application timing.
- In making such changes, you must not exceed the maximum annual nutrient application rate or the maximum rate per application.
- The application rate must comply with the requirements of the Regulation.
- Adjust subsequent applications of nutrients to accommodate the change in timing of the nutrient application and record the change in your NMP.

Crop Change

- Nutrient amounts and formulation should be adjusted (where possible) to account for a change in designated crop.
- If the nutrients have already been applied, the amount and formulation should be adjusted for the next crop to be grown, where possible, to account for the previous crop change.

Commercial Fertilizer Material or Analysis Change

- Where the nutrient composition that is listed in the NMP is altered, the altered material or analysis should be reflected in the NMAN plan.
- Subsequent nutrient applications should reflect these changes to the original NMP.

More Nutrient Than The Storage Design Capacity

In some cases, generally due to adverse weather conditions, the storage may not be sufficient to store all the manure produced.

To overcome this problem, the preferred solution would be to land-apply the manure where in doing so, will not result in an adverse effect.

Other Options

- Transfer the nutrient to an available storage facility with excess capacity (a Nutrient Transfer Agreement may be required).
- Work with your broker to take the excess.
- Utilize temporary in-field storage.

To Avoid A Spill You Should

- Avoid spreading solid manure closer to a watercourse than indicated by your NMP.
- Do not apply manure on steep slopes and avoid spreading on snow or prior to rainfall.
- Do not apply manure within 30 m (100 ft) of a dug well or within 15 m (50 ft) of a drilled well.

If A Spill Does Occur

- Notify the Spills Action Centre.
- Clean up the spill and land apply the material in accordance with the nutrient management plan or return the material to storage.
- Re-evaluate manure handling procedures and the effectiveness of the contingency plan.

Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy Application Form

A. General Information

This form is for those applicants that choose NOT to use the NMAN software to prepare the Nutrient Management Strategy they are required to submit to the Province of Ontario. Please ensure you read all the material. Once completed and signed, this is a legal document that you have certified to be correct. This form, once completed with the required attachments, will constitute the Nutrient Management Strategy. It is your responsibility to review/follow Ontario Regulation 267/03, as amended. The Reviewer's Checklist is a good reference tool when completing your application.

- Please ensure to retain a copy of your completed NM Strategy (and NM Plan, if applicable) for your records. Please note, approved documents will not be returned. It is your responsibility to keep copies of the documents that comprise your approved NMS.
- You will be contacted by OMAFRA staff if you are required to provide additional information during the review process.
- Upon approval, your NM Strategy is valid for a period of 5 years. At that time, you are not required to resubmit, but are required to update the NM Strategy and to keep it on file and available for inspection, if requested.

B. Application Status

Please check ☒ which of the following applies:

☐ This NMS is being submitted for approval.

☐ This NMS is being submitted as part of the submitter's certification requirements.

C. Operation Information

1. Farm Unit Operator

Name of Farm Unit Operator

Legal Farm Name

Address

See Farm Unit Declaration Form (attached)

2. Certified Nutrient Management Planner

Name of Certified Nutrient Management Planner

Certification Number

Telephone No. *(incl. Area code)*	E-mail Address

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Nutrient Management Strategy Application Form

Section 1 Overview of the Operation

Please provide a description of the operation including the following:

1. Reason for submission (expanding operation, new operation, planned changes).
2. Type and size of operation.
3. Overview of livestock/poultry facilities and practices that impact nutrient management, e.g. all in/all out; feed additives used.
4. Prescribed material produced or received, including all Non-agricultural source material (NASM).
5. Overview of cropping and management practices.

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Nutrient Management Strategy Application Form

Section 2 Farm Unit Declaration

1. Please attach the Farm Unit Declaration form.
2. For corporations, please attach a copy of the first page of your Articles of Incorporation showing the incorporation number. If there has been a name and/or address change please attach MCBS Schedule A (part of the T23 Corporate Tax and Annual Return). These documents will be used for verification of the recorded name and address.

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Nutrient Management Strategy Application Form

Section 3 Farm Unit and Farmstead Sketches

Map of Farm Unit Properties *(attach clearly labelled map)*

(The Farm Unit map may be a photocopy of a map of the area representing all properties, computer generated or hand drawn. More than one map may be required to include all properties. Please ensure all features listed below are shown. The map should be readable and include a north arrow.)

- Location of the entire land base declared in the Farm Unit:
  1. Land owned or controlled (rented or leased) or otherwise forms part of the Farm Unit;
  2. Road names, municipal boundaries.

Farmstead Sketch *(attach clearly labelled sketch)*

(The farmstead sketch(s) may be an aerial photo, computer generated or hand drawn and must include/address the following items, either by including them on the sketch, or indicating on the sketch that they do not exist. Sketch should be readable and include north arrow.)

- Location of generation facilities and storage(s):
  1. Permanent, temporary and proposed generating facilities;
  2. Permanent, temporary and proposed storage facilities and sites;
  3. Dimensions of all generating and storage facilities and sites.
- Distance from sensitive features to the nearest permanent nutrient storage/generating facility, including:
  1. Known wells (includes gas, oil, test and water wells);
  2. Municipal wells;
  3. Tile inlets;
  4. Surface water (as defined in Part I of O.Reg. 267/03).
- For nutrient storage within 50 metres of surface water, show a Flow Path of at least 50 metres to surface water or tile inlet.

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Nutrient Management Strategy Application Form

Section 4 Volume of Prescribed Material Produced Annually

Please provide a detailed description of the prescribed material produced and/or transferred into the Farm Unit in Table 4.1 and 4.2. *(Must include all prescribed materials generated in and transferred into this Farm Unit).*

1. Ensure all liquid systems, washwater, runoff from scrape alleys and paved yards or roofs are included in total volume of liquid prescribed material for this operation.
2. Ensure additional bedding is included in the total volume of solid prescribed material for this operation.
3. Ensure any runoff from solid storages is accounted for.
4. If livestock weight is lower than the value in Table 3.1 of the Nutrient Management Protocol incorporated into O.Reg. 267/03, as amended, a comprehensive detailed explanation must be attached.
5. For manure storage calculations:
   a. **New or expanding facilities** – the number of farm animals must be equal to or greater than the number determined using the Housing Capacity Guidelines (provided in O.Reg. 267/03 Table 3.1) or documentation must be included indicating that the maximum housing capacity of the barn is less than the Housing Capacity Guidelines.
   b. **Existing facilities** – the manure storage calculations are based on actual usage of the facility.
   c. In all cases, a comprehensive, written explanation must be included if the declared housing usage is less than the maximum housing capacity of the barn.
6. Attach and clearly label detailed volume calculation of prescribed materials.

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TABLE 4.1 Description of Generating Facilities that are Part of this Operation

Number of Livestock for Each Generating Facility included as Part of the Operation

Complete the information below using the three (3) livestock categories listed in the Reference Table for Determining the Number of Nutrient Units per Livestock Type found on page 17.

Farm Name as Recorded in the Farm Unit Declaration	Type of Livestock	Subtype	Sub-subtype	Number of Livestock	Nutrient Units	Storage System Number *(from Table 5.1)*	Annual Agricultural Source Material Production *(per Storage System)*	Agricultural Source Material Production Units
1.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
2.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
3.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
4.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
5.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
6.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons

☐ Additional generating facilities listings are attached.

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Table 4.2 Location and Identification of Incoming Prescribed Material Transfers

☐ No inco nsfers; all prescribed material is generated on this Farm Unit *(check ☒ if applicable)*

Name of Generator *(record operation identifier if applicable)*	Roll Number	Upper Tier *(county)*	Lower Tier *(township)*	Geo Township *(former township)*	Concession	Lot	Type of Agricultural Source Material *(e.g. solid dairy manure)*	Date *(yyyy/mm/dd)*	Amount of Material *(provide units of measure)*

☐ Additional incoming transfer listings are attached.

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Nutrient Management Strategy Application Form

Section 5 Storage Facilities

1. Ensure storage location and dimensions are included in the Farmstead Sketch.
2. Ensure liquid storage has 0.30 metres minimum freeboard, or 0.15 metres if storage has a non-slatted floor ***and*** is permanently covered.
3. If runoff management is required for one or more solid storage facilities, complete and attach the ***Runoff Management Checklist*** *available at www.omafra.gov.on.ca* .
4. If temporary storage is required, complete and attach ***Temporary Storage Checklist*** *available at www.omafra.gov.on.ca* .
5. For new and expanding prescribed material storage facilities, attach an ***Engineer's Commitment Certificate***. The *Engineer's Commitment Certificate* is ***not*** required for a permanent, solid nutrient storage facility that has (O.Reg. 267/03, Section 62):
   a. a volume less than 600 cubic metres ;
   b. a surface area less than 600 square metres; ***and***
   c. walls that do not have an exposed height of more than 1 metre.
6. Document the number of days of storage for each storage facility identified in Table 5.1.
7. Attach and clearly label the calculations of the days of storage for each storage system listed in Tables 4.1 and 5.1.
8. If the number of days of storage is less than 240, attach a detailed description showing how the prescribed materials will be managed within the storage capacity of the operation.
9. The prescribed materials generated in the NM Strategy must be accounted for in the NM Plan.

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Table 5.1 Description of Storage Facilities that are Part of this Farm Unit

Name of Facility	Type of Facility	Type of Storage *(check ☒ one)*	Dimensions *(include units of dimension in feet or metres)*	Storage Covered *(check ☒ one)*	Agricultural Source Material Type *(check ☒ one)*	Storage System Number *(transfer to Table 4.1)*	Days of Storage *(per Storage System)*
1.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
2.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
3.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
4.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
5.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
6.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
7.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		

☐ Additional storage facilities listings are attached.

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Nutrient Management Strategy Application Form

Section 6 Nutrient Content of Prescribed Materials

Complete Table 6.1 on the following page, including the following information:

1. List the nutrient values (ammonia and ammonium nitrogen, total kjeldahl nitrogen, total phosphorous, total potassium and total solids) for the prescribed materials generated or received as part of this operation.
2. If databank nutrient content was used, the dry matter must correspond to the predicted dry matter range in Appendix 1 of the Nutrient Management Protocol.
3. If nutrient analysis is used, attach and clearly label the test results. If the test results vary from those provided in Appendix 1 of the Nutrient Management Protocol, attach an explanation.
4. For blended manures, attach detailed calculations of nutrient and dry matter content.
5. Attach other information, e.g. verification of use and influence of feed additives (if used), separator or digester used.

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Table 6.1 Nutrient Content of Prescribed Materials

Prescribed Material (describe related to storage or transfer-in identified in Table 4.2)	Nutrient Content					Check ☒ method for determining nutrient values	
	Ammonium – N (NH4-N)	Total Kjeldahl Nitrogen (TKN)	Total Phosphorus (P)	Total Potassium (K)	Total Solids (dry matter)	Data-Bank *(check ☒ one)*	Lab Analysis (attach copy) *(check ☒ one)*
1. *e.g.* Liquid Heifer Manure (values reported as % of fresh weight)	700 ppm	1.2%	0.23%	1.5%	1.8%	☐ Yes ☐ No	☐ Yes ☐ No
1.						☐ Yes ☐ No	☐ Yes ☐ No
2.						☐ Yes ☐ No	☐ Yes ☐ No
3.						☐ Yes ☐ No	☐ Yes ☐ No
4.						☐ Yes ☐ No	☐ Yes ☐ No
5.						☐ Yes ☐ No	☐ Yes ☐ No
6.						☐ Yes ☐ No	☐ Yes ☐ No

☐ Additional storage facilities listings are attached.

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Nutrient Management Strategy Application Form

Section 7 Destination of Prescribed Materials

For all prescribed materials generated on the Farm Unit or other operation, a detailed, written description of their intended destination is required. Please fill out Table 7.1. Indicate the percentage of prescribed materials being land applied in the Farm Unit and transferred off the Farm Unit for each manure system for each of five (5) years.

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Table 7.1 Destination of Prescribed Materials

Prescribed Material (describe related to storage or transfer-in identified in Table 4.2)	Year	Source (check ☒ one)	Type	Amount (Include Units of Measure)	Days of Storage	Destination
1. *e.g.* Hog Feeder Storage	2006	☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation	Swine	900,000 gallons	240	This Farm Unit % Transferred %
1.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
2.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
3.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
4.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
5.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
6.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
7.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
8.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %

☐ Additional storage facilities listings are attached.

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Nutrient Management Strategy Application Form

Section 8 Transfer of Prescribed Materials

1. **For transfer of prescribed materials out of the Farm Unit, please provide the following in Table 8.1:**
   1. Type of transfer (broker, NMA transfer, non-NMA transfer).
   2. Name of receiver.
   3. Location.
   4. Volume of prescribed materials being transferred.
   5. Tillable acres available for the prescribed material.
   6. Date of transfer.
2. **Attach any necessary transfer or broker agreements as per O. Reg. 267/03. s.20, s.36, s. 37.**
   To ensure your contract meets your commercial needs outside of the regulatory requirements, you should seek legal advice.

   Transfer Agreements must identify:
   1. the person who owns or controls the operation **from** which the materials are to be transferred;
   2. the person who owns or controls the operation **to** which the materials are to be transferred;
   3. the type of material to be transferred;
   4. the quantity of material to be transferred;
   5. the proposed date of transfer; and
   6. the operation identifiers of both the receiving and generating operations, if assigned.

   Broker agreements with generators must identify:
   1. the type of prescribed material to be received;
   2. the quantity of prescribed material to be received;
   3. the projected date of receipt;
   4. a description of the operation in which the prescribed material was generated;
   5. the operation identifier for the operation in which the material was generated or for the farm unit where the operation is carried out, if assigned.

   The broker shall retain the above records for four years after the date of receiving the prescribed materials.

   Broker agreements with receivers must identify:
   1. the type of prescribed material to be transferred;
   2. the quantity of prescribed material to be transferred;
   3. the proposed date of transfer;
   4. a description of the operation to which the prescribed material was transferred;
   5. the operation identifier for the operation or for the farm unit where the operation is carried out, if assigned.

   The broker shall retain the above records for four years after the date of transferring the prescribed materials.

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Table 8.1 Location and Identification of Outgoing Prescribed Material Transfers

☐ No outgoing transfers; all prescribed material is applied on this Farm Unit *(check ☒ if applicable)*

Type of Transfer *(check ☒ one)*	Name of Receiver	911 Address	Roll Number	Upper Tier *(county)*	Lower Tier *(township)*	Geo Township *(former township)*	Conc.	Lot	Telephone *(incl. Area code)*	Tillable Acres	Date *(yyyy/mm/dd)*	Amount of Agricultural Source Material *(provide units of measure)*
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												

☐ Additional outgoing transfer listings are attached.

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Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy Application Form

Section 9 Contingency Plan

Does this operation have a written Contingency Plan that includes all of the items listed below?

☐ Yes ☐ No

The Contingency Plan must address all of the following in the event unforeseen circumstances occur:

1. The names and contact numbers for people who are authorized to make decisions for the operation in an emergency.
2. When more nutrients are generated and/or received than planned.
3. When storage is reaching capacity sooner than planned.
4. Unanticipated release of nutrients (e.g. spills, breaks in equipment or storage, etc.). List the phone numbers for **MOE Spills Action Centre (1 800 268-6060)**, local municipalities, emergency assistance and the names and phone numbers of neighbours and heavy equipment operators to contact.

   Indicate how you will:

   - Avoid a spill
   - Stop a spill
   - Contain a spill
5. When weather conditions and/or equipment conditions and availability prevent planned storage or field application.

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Reference Table for Determining the Number of Nutrient Units per Livestock Type

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Beef	Backgrounders (7–12.5 months)	Confinement	3
Beef	Backgrounders (7–12.5 months)	Yard/Barn	3
Beef	Cows (includes calves to weaning)	Confinement	1
Beef	Cows (includes calves to weaning)	Deep Bedded	1
Beef	Cows (includes calves to weaning)	Yard/Barn	1
Beef	Feeders (7–16 months)	Confinement	3
Beef	Feeders (7–16 months)	Confinement Bedded Pack	3
Beef	Feeders (7–16 months)	Confinement Total Slats	3
Beef	Feeders (7–16 months)	Yard/Barn	3
Beef	Short Keep (12.5–17.5 months)	Confinement	2
Chickens	Broiler Breeder Growers (females + males transferred out)	Floor System	300
Chickens	Broiler Breeder Layer (females + males transferred in)	Cages	100
Chickens	Broiler Breeder Layer (females + males transferred in)	Litter With Slats	100
Chickens	Broilers	8-Week Cycle	351
Chickens	Broilers	9-Week Cycle	300
Chickens	Broilers	10-Week Cycle	250
Chickens	Broilers	12-Week Cycle	199
Chickens	Layer Pullets (day-olds)	Cages	500
Chickens	Layer Pullets (day-olds)	Litter	500
Chickens	Laying Hens	Belt And Other Removal System (daily)	150
Chickens	Laying Hens	Belt With Air Drying (daily)	150
Chickens	Laying Hens	High Rise – Stored In Barn	150
Chickens	Laying Hens	Liquid – Stored In Barn	150
Chinchilla	Breeding Females (incl. males/rep/market animals)		320
Dairy	Calves Large-Frame		6
Dairy	Calves Medium-Frame (Guernsey size)		7
Dairy	Calves Small-Frame (Jersey size)		8.5
Dairy	Heifers Large-Frame	Deep Bedded	2
Dairy	Heifers Large-Frame	Free-Stall	2
Dairy	Heifers Large-Frame	Manure Pack Outside Access	2
Dairy	Heifers Large-Frame	Pack Scrape 1 Side	2
Dairy	Heifers Large-Frame	Pack Scrape 2 Sides	2
Dairy	Heifers Medium-Frame (Guernsey size)	Deep Bedded	2.4
Dairy	Heifers Medium-Frame (Guernsey size)	Free-Stall	2.4
Dairy	Heifers Medium-Frame (Guernsey size)	Pack Scrape	2.4
Dairy	Heifers Small-Frame (Jersey size)	Deep Bedded	2.9
Dairy	Heifers Small-Frame (Jersey size)	Free-Stall	2.9
Dairy	Heifers Small-Frame (Jersey size)	Pack Scrape	2.9

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Reference Table for Determining the Number of Nutrient Units per Livestock Type - continued

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Dairy	Milking Age Cows Large-Frame	4-Row Free-Stall Head-To-Head	0.7
Dairy	Milking Age Cows Large-Frame	4-Row Free-Stall Tail-To-Tail	0.7
Dairy	Milking Age Cows Large-Frame	6-Row Free-Stall	0.7
Dairy	Milking Age Cows Large-Frame	Bedded Pack	0.7
Dairy	Milking Age Cows Large-Frame	3-Row Free-Stall	0.7
Dairy	Milking Age Cows Large-Frame	Sand	0.7
Dairy	Milking Age Cows Large-Frame	Tie-Stall	0.7
Dairy	Milking Age Cows Medium-Frame (Guernsey size)	Bedded Pack	0.85
Dairy	Milking Age Cows Medium-Frame (Guernsey size)	Free-Stall	0.85
Dairy	Milking Age Cows Medium-Frame (Guernsey size)	Tie-Stall	0.85
Dairy	Milking Age Cows Small-Frame (Jersey size)	Bedded Pack	1
Dairy	Milking Age Cows Small-Frame (Jersey size)	Free-Stall	1
Dairy	Milking Age Cows Small-Frame (Jersey size)	Tie-Stall	1
Deer/Elk	Elk Adults (>24 months) (includes unweaned offspring)		2
Deer/Elk	Elk Feeders		6
Deer/Elk	Elk/Red Deer Hybrid Adults (includes unweaned offspring)		4
Deer/Elk	Elk/Red Deer Hybrid Feeders		10
Deer/Elk	Fallow Deer Adults (>24 months) (includes unweaned offspring)		13
Deer/Elk	Fallow Deer Feeders		23
Deer/Elk	Red Deer Adults (>24 months) (includes unweaned offspring)		7
Deer/Elk	Red Deer Feeders		14
Deer/Elk	White-Tailed Deer Adults (>24 months) (includes unweaned offspring)		11
Deer/Elk	White-Tailed Deer Feeders		21
Ducks	Peking	Breeders	105
Ducks	Peking	Growers	105
Emu	Adults (includes offspring to market size)		12
Fox	Breeding Females (includes rep/market animals/males)		25
Goats	Dairy Does (including unweaned offspring)	Confinement	8
Goats	Dairy Kids	Confinement	
Goats	Feeder Kids (>20 kg)	Confinement	
Goats	Mature Meat Goat (including unweaned offspring)		8

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Reference Table for Determining the Number of Nutrient Units per Livestock Type - continued

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Horses	Large-Frame (including unweaned offspring)	Box Stalls	0.7
Horses	Medium-Frame (including unweaned offspring)	Box Stalls	1
Horses	Small-Frame (including unweaned offspring)	Box Stalls	2
Mink	Breeding Females (includes rep/market animals/males)		90
Ostrich	Adults (includes offspring to market size)		4
Rabbits	Breeding Does (includes bucks/rep/fryers)	1-Tier Cages	40
Rabbits	Breeding Does (includes bucks/rep/fryers)	2-Tier Cages	40
Rabbits	Breeding Does (includes bucks/rep/fryers)	3-Tier Cages	40
Sheep	Dairy and Feeder Lambs	Confinement	20
Sheep	Dairy and Feeder Lambs	Outside Access	20
Sheep	Dairy Ewes and Rams (including unweaned offspring and replacements)	Confinement	6
Sheep	Meat Ewes and Rams (including unweaned offspring and replacements)	Confinement	8
Sheep	Meat Ewes and Rams (including unweaned offspring and replacements)	Outside Access	0
Swine	Feeders	Full Slats	6
Swine	Feeders	Full Slats (wet/dry feeders)	6
Swine	Feeders	Deep Bedded	6
Swine	Feeders	Partial Slats	6
Swine	Feeders	Partial Slats (wet/dry feeders)	6
Swine	Feeders	Solid Scrape	6
Swine	Gilts – Breeders		5
Swine	Sows (dry) (AI)	non-SEW	3.64
Swine	Sows (dry) and Boars	non-SEW	3.5
Swine	Sows (dry) and Boars	SEW	3.33
Swine	Sows with Litters	non-SEW	3.5
Swine	Sows with Litters	SEW	3.33
Swine	Sows, boars, and litters	SEW	3.5
Swine	Weaners	non-SEW	20
Swine	Weaners	non-SEW (wet/dry)	20
Swine	Weaners	SEW	20
Swine	Weaners	SEW (wet/dry)	20

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Reference Table for Determining the Number of Nutrient Units per Livestock Type - continued

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Turkeys	Breeder Toms		0
Turkeys	Broilers <6.2kg		133
Turkeys	Hens 6.2–10.8 kg		107
Turkeys	Toms >10.8 kg		76
Turkeys	Turkey Breeder Layers		0
Turkeys	Turkey Pullet (0–6 weeks)		267
Veal	Grain-Fed Veal		6
Veal	Milk-Fed Veal		6

NOTE:

For animals not listed in the table above, the number of animals per nutrient unit can be calculated by determining the number of animals that will produce the amount of nutrients that give the fertilizer replacement value of the lower of 43 kilograms of nitrogen or 55 kilograms of phosphate as nutrient. Consult with Ministry staff if assistance is required to complete this calculation.

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Farm Unit Declaration Form

1. General Information

A Farm Unit as defined by the *Nutrient Management Act, 2002*, Ontario Regulation 267/03 (as amended) is the basis for a Nutrient Management Strategy and/or Nutrient Management Plan.

For each Farm Unit there is only one Nutrient Management Strategy and one Nutrient Management Plan.

The Farm Unit must include all land on the property where the nutrients are generated.

The Farm Unit may include other properties.

2. Contact Information

Name of Farm Unit Operator

Legal Farm Name

911 Address *(Street No., Street Name, RR, Lot, Concession, Township)*

City/Town/Village	*Province*	*Postal Code*
	Ontario	

Telephone No. *Home (incl. Area code)*	Telephone No. *Business (incl. Area code and ext.)*
E-mail address	Operation Identifier *(if previously assigned by Ministry)*

3. Declaration

As the farm unit operator I declare that the facilities and property referred to in Table 1 comprise the entirety of this Farm Unit. I acknowledge the requirement to complete a Nutrient Management Plan and/or Strategy, and that such Nutrient Management Plan and/or Strategy shall include all of the lands identified on this form.

I hereby warrant that the information contained on this form is true, and that I have authority to complete this document.

Indicate the type of operation that this Farm Unit is in: *(check ☒ one only)*

☐ Corporation *(specify name below)*

☐ Division of a Corporation *(specify name below)*

Name of Corporation ***or*** Division of Corporation

☐ Partnership *(specify names and addresses of Partners below)*

☐ Sole Proprietorship *(specify name and address of Owner below)*

Names and Addresses of Partners ***or*** Name and Address of Owner

Name of Farm Unit Operator *(please print)*	Signature	Date *(yyyy/mm/dd)*
Name of Witness *(please print)*	Signature	Date *(yyyy/mm/dd)*

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Table 1 Location and Identification of Land that is Part of this Farm Unit

Give each farm a unique name that will also be used in the Nutrient Management Plan for this Farm Unit. ☐ As seen in NMAN
Be sure to list all roll numbers, concessions and lots that are related to this Farm Unit.

Farm Name	911 Address	Roll Number	Upper Tier *(county)*	Lower Tier *(township)*	Geo Township *(former township)*	Concession	Lot	Tillable Area *(include units ha or ac)*	Generator or Receiver *(check ☒ any that apply)*	Status *(check ☒ one)*
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement

☐ Additional land listings are attached.

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Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy *and/or* Plan Sign-Off Form

1. Contact Information

Name of Farm Unit Operator

Legal Farm Name

911 Address *(Street No., Street Name, RR, Lot, Concession, Township)*

City/Town/Village	*Province* Ontario	*Postal Code*

Telephone No. *Home (incl. Area code)*	Telephone No. *Business (incl. Area code and ext.)*
E-mail address	Operation Identifier *(if previously assigned by Ministry)*

2. Applicant Declaration

As the farm unit operator, I hereby certify that

a. to the best of my knowledge, excluding unforeseen or uncontrollable circumstances, the information contained in this application provides an accurate description of the existing and proposed operation over the time period covered by this plan or strategy,

b. I understand that in the course of the administration of the Act, the Ministry may provide the information contained in this application to external agents or the Ministry of the Environment for review and analysis, and authorize the Ministry to provide this information to its external agents, and authorize its external agents or the Ministry of the Environment to collect this information from the Ministry, and

c. I, the applicant, ☐ authorize *OR* ☐ do not authorize the Certified Nutrient Management Planner who prepared this strategy and/or plan to act as my agent for the purposes of obtaining approval for this application, and to provide the Ministry, or its agents, any information required in the review of this application.

Name of Applicant *(please print)*	Signature	Date *(yyyy/mm/dd)*

3. Declaration of Individual who Prepared this Strategy and/or Plan

I, the individual who prepared this strategy and/or plan, hereby certify that based on relevant information provided in good faith and excluding unforeseen or uncontrollable circumstances, the recommendations contained in this application will, if implemented, result in acceptable management practices in accordance to the regulation and protocols under the *Nutrient Management Act, 2002*.

Certification No. *(if applicable)*

Name of Individual who Prepared this Strategy and/or Plan *(please print)*	Signature	Date *(yyyy/mm/dd)*

4. Provision of False Information in this Application

Any false or misleading information submitted by the applicant in this document may result in the invalidation of any approvals or permits granted, and prosecution in accordance to the provisions of the *Nutrient Management Act, 2002*.

This application may consist of all or some of the following:

- Overview of the Operation
- Farm Unit Declaration
- Farm Unit Sketch
- Description of Storage Facilities
- Description of Generating Facilities
- Location and Identification of Incoming
- Prescribed Material Transfers
- Nutrient Content of Prescribed Material
- Destination of Prescribed Material
- Transfer of Prescribed Material
- Volume of Prescribed Material Produced Annually
- Contingency Plan
- Field Properties
- Field Sketches
- Soil Samples and Analysis
- Crop Rotation and Yields
- Tillage Practices
- Commercial Fertilizer Application
- Application of Prescribed Materials
- Agronomic and Crop Removal Balance for Nitrogen and Phosphorus

Notice of Collection

Personal information provided in this application is collected under the authority of the *Nutrient Management Act, 2002* and Ontario Regulation 267/03, s. 28(1), s. 29(1) & (1.1), or s. 30(1) & (1.1). It will be used for the review, approval, enforcement and audit of the strategy or plan and research. The information may be made available to external experts contracted by OMAFRA for advice during review and approval, and to the Ministry of the Environment for advice during review and approval or for enforcement purposes. The following information from approved strategies or plans will be used to create a public record:

1. name of farm operation;
2. owner of the farm unit and developer of each strategy or plan;
3. properties covered by the declared farm unit of each strategy or plan;
4. days storage in each strategy; and
5. the proportion of the nutrient applied to the declared farm unit of each strategy or plan, and the proportion moved to other properties.

Questions about the collection of information can be directed to the Manager, Approvals, Nutrient Management Branch, Ministry of Agriculture, Food and Rural Affairs, 1 Stone Road West, Guelph ON N1G 4Y2, telephone: 519-826-6368.

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Acknowledgements

Special thanks to all those who have contributed to this publication by lending their expertise and resources.

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Al Dam, Bill Groot-Nibbelink, Daniel Ward, Christine Brown, Ontario Ministry of Agriculture, Food and Rural Affairs.

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ISBN: 1-4249-0829-9
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09-06-2M

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